Power System Engineering, Inc.

Full-service consultants

FEASIBILITY STUDY FOR A COMMUNITY NETWORK

Proposal Prepared for:

Town of Jamestown
Jamestown, Rhode Island

January 6, 2022

Contact: Tom Asp

aspt@powersystem.org

Direct: 608-268-3509

Mobile: 847-922-3978

1532 W. Broadway
Madison, WI 53713

www.powersystem.org

1 Cover Letter

January 6, 2022

Town Finance Director's Office
93 Narragansett Avenue
Jamestown, RI 02835

Subject: Feasibility Study for a Community Network

Power System Engineering (PSE) appreciates this opportunity to assist The Town of Jamestown (Town) with the development of a Feasibility Study for a Community Network. On the following pages, you will find an overview of our understanding of the project, introduction to PSE, our project approach, proposed workplan, PSE's project team, and references.

PSE is a full-service engineering and consulting firm that has its roots working with municipals and cooperatives across the country. Over a forty-year period, PSE has evolved from completing core electric engineering services such as transmission and distribution planning, substation design, and line design to a vibrant communications infrastructure practice including broadband planning. PSE offers technical expertise related to utility fiber design and modeling for broadband. **Our team has experience with calculating the associated costs, forecasting the number of potential broadband subscribers, conducting market research, and assisting with development of partnerships, as well as modeling fiber costs and designs.**

The evaluation of our clients' needs, architecture, and technology development comes with an unbiased review of the options and is developed from doing design, business cases, procurement, and deployment-related projects that involve both communication and automation technologies. **PSE is not a value-added reseller of any communications vendors and takes an independent technology assessment and market opportunity view.**

PSE is entirely focused as an independent consultant and has no conflict of interest with the proposed project. PSE is NOT a value-added reseller (VAR) of any software, hardware, or services from any supplier or provider. Our business model is based on being an agent, advocate, resource, and technical advisor to our clients.

The Town's goals are admirable, and pursuit of a Community Network may prove to be the best alternative. It is, however, critical to understand municipal broadband successes and the failures. Many of the "consultants" and subsequent advice originates from an advocacy point of view – that a Community Network is the only solution. These advocates overlook the financial challenges that municipal overbuilds see, how most are funded, and the failures that have occurred over the past two decades. During this study, we will highlight the successes and how those successes are funded, as well as the failures.

Given the demographics in the Town (low population, moderate population density, and seasonal residents), it will likely be a financial challenge to meet a vision that all residents, businesses, and visitors will have access to affordable world-class broadband networks that enable us to survive and thrive. **In order to meet this vision, consideration of several points must occur:**

1. **Grants**. The cost to build FTTP or wireless in the Town is expensive; it may easily be 1.5 to 3 times that of other parts of the country. **Grants or other funding are likely required**.
2. **Partnerships or Alliances**. The low population and the seasonality of residents will make it a challenge for community operated broadband business. To obtain and maintain economies of scale for operating costs working with an existing broadband provider might be required. As indicated in the invitation to bid, evaluating the role of OSHEAN (Ocean State Higher Education and Economic Development and Administrative Network) and affiliated providers is a critical part of the study.
3. **Market structure understanding**. Early in the project, it is important to understand and apply key regulatory issues, critical definitions to shape objectives (affordability, for example), supply issues, and demand issues. We have included a brief overview of the broadband market structure as Exhibit A to our proposal, which covers a) affordable broadband definition, b) partnerships and alliances, c) action classifications, d) open access track record in the USA, and e) cost range of deploying fiber.
4. **Collaboration amongst stakeholders**. Given the demographics, aggregation of demand is essential to make the market attractive to a broadband provider – the Town or other.
5. **Understand and apply the Town's vision and mission**. The starting point in developing the feasibility study is to understand Town's vision, goal, and missions for the potential development of a broadband infrastructure (see Exhibit A).

   A feasibility study should stress ten key points:

   1) Understand broadband is a competitive business – consumers do have choices.
   2) Get your house in order (operations and finance).
   3) Do a thorough feasibility study and business plan – be cautious of advisors or consultants that promote no-risk deals or offers.
   4) Know and understand every assumption and number in the financial analysis.
   5) Facilitate team learning – give your team the time to learn, they are going to run the new business day-to-day.
   6) Work closely with your Council.
   7) Don't bet the bank – start slow.
   8) Look at the potential for partnerships to avoid risks and reduce capital costs.
   9) Know where failures occurred and why – understand both the good and bad municipal and cooperative efforts.
   10) A spreadsheet is just a spreadsheet. It's only as good as the assumptions and how those assumptions are treated.

   Please refer to https://www.youtube.com/watch?v=CNrQmPRScMU&t=4s to view a webinar discussing the above ten points.

Regardless of whether PSE is selected, we encourage the Town to apply the above points. In addition, we are prepared to assist the Town, on a time and materials basis, in evaluating broadband financial model assumptions, deployment cost estimates, and other key inputs into the feasibility study should another consultant be selected for the study development.

Our proposal is formatted in the sections listed in the Invitation to Bid (Section 7 was not present in the invitation to bid). We have also attached a Scope of Work (Exhibit C) and an example survey (Exhibit B) for your review.

Feel free to reach out to me with any questions at aspt@powersystem.org or 847-922-3978. Our mailing address is 1532 W. Broadway, Suite 103, Madison, WI 53713.

We may not be the lowest cost proposal, but we do not supply cookie-cutter studies and advice. We strive to provide you the highest value. We are excited about this project and look forward to the opportunity in assisting the Town of Jamestown.

Sincerely,

Table of Contents

2 Overview of Respondent

Power System Engineering (PSE) began in early 1974, establishing an office in Madison, WI, our corporate headquarters, to serve the engineering and technology needs of electric cooperatives. Over the past 45 years, PSE has evolved to become a full-service electrical and mechanical consulting firm for utilities, private industry, government entities, and associations across North America. We have over 80 employees and include project, resource, system planning, and communication engineers; economists, fiber, GIS, SCADA, AMI and IT experts; line design and database technicians; and rate and financial analysts. We have developed a broad base of expertise and have substantial capability to help our clients in areas from communication and distribution system automation, system planning and protection, rates and financial studies, supporting IT infrastructure, as well as system design. Our team has experience with the facilitation of broadband with local governments, non-profits, and electric utilities. Our team also has experience calculating the associated costs, forecasting the number of potential broadband subscribers, modeling fiber costs, and creating conceptual designs.

The lead PSE office for this project is Madison, Wisconsin. Team member office locations are included in the bios in Section 3.

Tom Asp, the project lead, is based in Wilmington Delaware, has conducted broadband deployment strategies for over 150 municipalities and electric utilities over the past three decades. In these projects, Tom and his team documented existing infrastructure, services offered, and developed strategy and feasibility plans.

Our project team members have assisted a range of electric cooperatives, municipal electric utilities, municipalities, and counties in fiber-to-the-premises (FTTP) feasibility studies, FTTP business planning, market research, engineering, and financial analysis. Many of our engagements have focused on strategies to deploy fiber infrastructure to support core electric utility automation efforts, promote economic, and facilitate the availability of broadband services to local businesses residential consumers.

Our project team has assisted over 150 entities in conducting broadband studies. Some of these projects are summarized in Sections 3 and 5, which highlights staff expertise and experiences.

- **Network:** We have designed and assisted in implementation of the complete range of wired and wireless broadband solutions, including FTTP platforms (Active E, GPON, XG-PON, XGS-PON, NG-PON2) and wireless (TV white space, CBRS, 4.5 GHz licensed, 2,4 GHz unlicensed, 5 GHz unlicensed, LTE). We are also active in following the evolving LEO alternatives.

- **Financial:** Each of broadband projects involve a detailed financial analysis and follow accounting standards. Our financial forecasts are "banker-ready" and are used to obtain financing. We have also developed financial studies to support litigation efforts.

- **Regulatory/Legal:** We are familiar with the range of regulatory hurdles often presented on state and federal levels. We can assist in dealing with regulatory issues; however, we are not attorneys. We strongly recommend that any plan be reviewed by legal counsel.

- **Services:** Understanding competition, substitute products, and evolving consumer needs is critical. Our staff has examined service needs for over 150 broadband studies and has conducted more than 80 market surveys since 1997.

- **Project Management**: Our work with municipals, electric cooperatives, and the RUS requires a formal project management approach for design and construction support. This experience and skills are applied to our broadband projects as well.

- **Partnerships:** Partnerships are critical, especially in smaller communities and rural areas. We have assisted in the breadth of partnership approaches including operational partnerships and joint investment. We have also assisted municipalities in encouraging broadband investment from a private provider (Culver City and Ting, for example). Unfortunately, most "partnerships" that we see proposed by others have the public entity taking the risks and the private provider taking the rewards. It is critical that any partnership has a proper balance of risks and rewards.

For broadband market research, PSE uses Clearspring Research[1] based in Madison, Wisconsin. The PSE and Clearspring team have conducted over 100 surveys over the past 20 years.

3 Project Team, Roles, and Resources

Our team leader for broadband planning is **Tom Asp.** Tom has more than 35 years of experience in communication planning and business development for electric cooperative and public power systems. He is recognized as a nationwide expert in evaluating and offering recommendations regarding electric utility broadband communications systems.

Tom has been actively involved with broadband market research, network feasibility analysis, broadband system design, and the preparation of financial statements and quantitative business plan analysis for cooperative electric, municipal, and public power clients for more than 20 years. He also has extensive experience presenting to utility leadership, conducting needs assessment interviews, and facilitating stakeholder sessions.

In this area, Mr. Asp's experience includes preparing connectivity feasibility studies for cooperative networks, including economic analysis, market assessment, technology review, vendor analysis, and business plan development. He has assisted numerous utilities with evaluating the feasibility of broadband services alternatives, including provider partnerships and cooperative-owned networks. He has reviewed offerings and operations of incumbent telecommunications providers and assisted in negotiations with incumbent telecommunications providers to enhance availability of existing services and to encourage new and innovative offerings.

[1] See https://clearspringresearch.com/

Tom has conducted over 150 broadband feasibility studies over the past twenty-five years. These studies were conducted by Tom at PSE, as a partner at Virchow Krause (Baker Tilley), and as a Principal at CTC.

A handful of examples of his projects include:

- Supported Tipmont REMC (Indiana) during their development of a broadband strategic and implementation plan. Activities included review of and edits to financial projections, review of proposed vendor contracts and pricing, support of partner negotiations, and review of grant opportunities. As a result of the planning, Tipmont is on a mission to transform their cooperative from an electric-only provider to an essential services provider – the tools communities need to be successful. Tipmont has identified broadband as being crucial to individual, family, and community success. As a starting point, Tipmont has initiated FTTP deployment to 2,200 homes in the more rural areas of their service territory.
- Prepared a high-level broadband study, sponsored by the MMEA for six Michigan municipal electrics (Charlevoix, Eaton Rapids, Grand Haven, Hart, Negaunee, and Norway). Work included development of a conceptual FTTP design and cost estimate, and preparation of a financial model for retail service and dark FTTP models.
- Assisted Marshfield Utilities (Wisconsin) in reviewing a business plan prepared by another party. Our work included the financial model including vetting all assumptions, reviewing the model structure and treatment of assumptions, verifying statements follow accounting standards, reviewing FTTP design, and reviewing all design assumptions.
- Assisted Oconee County (South Carolina) with deployment and operation of a 350-mile fiber build that connected county schools, fire stations, county facilities, and other anchor institutions throughout the county.
- Prepared a Fiber Broadband Feasibility Study and Business Plan for Norwich Public Utilities (NPU), Norwich CT. The results showed the potential for NPU to offer broadband services in the community. The projections showed that if the City were to waive its fee on NPU gross revenues, it might be possible to cash flow the proposed broadband enterprise. With the fee, however, the margins were reduced substantially and increased the required take rates to unrealistic percentages.
- Provided Warren RECC (Kentucky) an evaluation of the opportunity and risks of deploying FTTP in the rural portion of Warren County. Activities included conducting a competitive assessment, conducting market research on residential consumers interest and need for broadband, preparing implementation cost estimates, preparing financial projections, and preparing various partnership strategies. Following the study, Warren RECC decided to take an approach of working with neighboring telephone cooperatives to encourage and support their expansion of broadband in Warren's service area.
- Served as a business consultant to the City and County of San Francisco. Investigated the feasibility of the city building and operating a (FTTP) network to every home and business in San Francisco. The project included an analysis of multiple business models and business recommendations customized for San Francisco's unique circumstances.
- Developed a business case analysis for DC-Net, a District-owned and operated fiber optic telecommunications network that provides voice and data services. The network consists

of resilient, interconnected fiber optic rings that connect more than 400 government buildings in the District, including Police Department, Emergency Management Agency, and Fire Department radio towers.

- Conducted a feasibility study, a business case analysis, and an "off-the-balance-sheet" benefits analysis for a fiber-optic network proposed by the mayor of the City of Seattle. The first study, FTTP Municipal Broadband Risks and Benefits Evaluation, sponsored by Seattle City Light, included an internal needs analysis, market research of both residential and business, assessment of competing services and technologies, and evaluation of the business case and business risks.
- Performed an expert assessment of a business and marketing plan for Utah Telecommunication Open Infrastructure Agencies (UTOPIA's) open access FTTP network. The project included a strategy session with key stakeholders, collection of relevant background material, an analysis of UTOPIA market research and marketing models, and an independent evaluation of UTOPIA's business plan. Mr. Asp's work focused on improving the participating UTOPIA communities' ongoing cash flow and increasing participation of households and businesses in those communities.

Eric Wirth leads the technical team in FTTP and wireless planning. Eric has worked with clients across the country from small towns and electric cooperatives to the largest cities in the US, such as New York City and San Francisco. Eric is based in Washington, DC.

One of Eric's specialties is designing and developing cost estimates for clients to weigh the feasibility of constructing broadband networks, such as a fiber to the premises network or fixed wireless networks, to serve its constituents. Developing a high-level design and cost estimate allows our clients to make business planning decisions and to comprehend the total cost of ownership for maintaining and operating a broadband network. Eric's FTTP and wireless design and cost estimates are then used to develop business planning and financial analysis decisions such as how many constituents need to sign up for the service and how much the service would have to cost to be financially viable.

Eric also has extensive experience with designing and developing wireless networks to fit a variety of telecommunications needs. This experience extends across the RF spectrum, providing solutions to best meet a client's needs from critical public safety microwave networks and SCADA systems to using unlicensed spectrum to provide broadband to customers and constituents.

Tom and Eric are supported by PSE staff with a range of experiences in business planning, needs assessments, fiber design, wireless design, network architecture, network deployment, and implementation. Our team members (in alphabetical order) will include:

Tyler Caulum (Senior GIS Analyst, Madison, WI). Mr. Caulum earned a BS degree in Geography from the University of Wisconsin-Whitewater at Whitewater, Wisconsin. Mr. Caulum creates Enterprise GIS servers to host data and geospatial services for clients to take full advantage of their GIS infrastructure. He uses the available data to create and maintain a functioning and fluid Utility Network. He constructs various applications and scripts using the data from the Utility Network to greatly increase the efficiency of field workers day to day tasks.

Bryan D. Durnen *(Telecommunications Engineering Consultant, Madison, WI)*. Mr. Durnen earned a BS degree in Electrical Engineering from the University of Wisconsin-Platteville at Platteville, Wisconsin. He has over 20 years of experience designing and deploying wireless and wired communications systems, with 12 of those years with a public utility. He is experienced with electric utility radio systems including land mobile radio, microwave and point-to-multipoint radio system design, proposal creation, and technical project management.

Daniel A. Lange *(GIS Analyst, Carmel, IN)*. Mr. Lange earned a MS degree in Geography and a BS in Biology from Ball State University at Muncie, IN. He has a strong background in geography specializing in GIS with knowledge of geographic and cartographic principles, spatial reasoning, and statistics. He is skilled in ESRI's suite of products including ArcGIS Pro, ArcGIS Online and Apps, Python, Microsoft Excel. Great aptitude for learning computer software, processes, and analytical methods.

Cynthia M. Studner *(Project Coordinator, Madison, WI)*. Ms. Studner has a BA degree in English and an MFA degree in Creative Writing from George Mason University at Fairfax, Virginia. Cynthia provides project coordination on technology assessments, AMI, SCADA, DA, Load Management projects, and others. Cynthia has facilitated dozens of technology and automation procurement projects and offers years of experience in technical editing and quality control at PSE.

Logan Suhr *(Senior Geospatial Consultant, Madison, WI)*. Mr. Suhr has a BS degree in Applied Geography from the University of Wisconsin- La Crosse at La Crosse, Wisconsin. His GIS experience includes enterprise database administration, web map and application development, cartography, and mobile mapping. He has over ten years of professional experience with programming languages such as Python, JavaScript, and VB.NET, as well as software suites such as ArcGIS Desktop, QGIS and the Adobe Creative Suite. His skillset includes enterprise database design, data entry automation, quality assurance and quality control, business intelligence analytics, and the use of GIS as a marketing tool.

Joe Warren *(Telecommunications Engineering Consultant, Madison, WI)*. Mr. Warren earned an Associate degree in Electronic Engineering Technology from New Brunswick Community College at Moncton, New Brunswick. Joe has over 30 years of experience with wireless, wireline, and optical fiber communications systems. He is experienced with designing and deploying Land Mobile Radio systems and microwave backbone systems, as well as point-to-point/multipoint wireless data networks. Joe has extensive field experience with new system build out commissioning, trouble isolation and preventative maintenance of complex communication systems. His unique background has enabled him to propose innovative solutions utilizing his understanding of clients' communication challenges.

Jim Weikert *(Vice President of Utility Automation and Communications, Madison, WI)*. Mr. Weikert earned a BS degree in Electrical Engineering from the Milwaukee School of Engineering at Milwaukee, Wisconsin and an MBA from Edgewood College at Madison, Wisconsin. He has over 20 years of engineering experience and leads the SCADA, Substation Modernization, DA, and OMS focus areas for PSE. Jim assists utilities in long-term strategies such as smart grid roadmaps, business cases and modernization plans. He leads design and deployment of SCADA/DMS/OMS systems for cooperative and municipal utilities. In addition, he has a strong

background in communications systems and has experience monitoring and controlling spread-spectrum, licensed, cellular, and Wi-Fi technologies.

PSE's project team will be assisted by our subcontractor Clearspring Research, for the survey portion of the project. Doug Carlson and Traci Janikowski will lead. Their bios are below.

Traci M. Janikowski (*Research Director*). Prior to joining Clearspring Research, Ms. Janikowski held management and analyst positions at marketing research consulting firms for over 20 years. Ms. Janikowski is an experienced researcher, having directed numerous qualitative and quantitative market research projects to customers in a variety of industries.

Ms. Janikowski is a trained professional in survey research methodology and analysis, and she is experienced in all phases of the research process. She has assisted clients with assessing attitudes, opinions, and behavior, including brand image and positioning, satisfaction and loyalty, service quality, community needs, employee and member engagement, and customer segmentation studies.

Ms. Janikowski holds a Bachelor's Degree in Sociology with a Concentration in Analysis and Research, and a Master's degree in Human Relations and Business, a multidisciplinary program in business, communications, and human development. Her expertise lies in combining her knowledge of data analysis techniques with an interest in human behavior to better understand clients' customers, members, or target markets.

Douglas K. Carlson (*Principal Consultant*). Douglas Carlson is a co-founder of Clearspring Energy Advisors and Clearspring Research. Prior to founding Clearspring, Mr. Carlson held management and senior analyst positions at major electric and gas utilities and at a consulting firm. Mr. Carlson has over twenty years of progressive experience in the energy industry including work for IOU, cooperative, and municipal utilities.

Mr. Carlson has a strong background in energy market and policy analysis including market evaluations, regulatory policy analysis, and strategic planning. He has directed load forecasting studies, market research initiatives, energy efficiency evaluations, and renewable energy studies for numerous utilities. Mr. Carlson has also coordinated strategic planning efforts to assess competitive positioning and to better prepare for uncertain futures.

Mr. Carlson has provided presentations on energy markets, economic and load forecasts, and competitive strategies to energy industry organizations, senior management groups, and boards of directors. He has also provided expert testimony before state regulatory commissions regarding load forecasting, energy efficiency, and economic conditions.

4 Contingencies

We do not have any known or anticipated resource(s) or time constraints, potential project conflicts, conflicts of interest or issues that could limit or prevent performance of the work required in this proposal.

5 Project Experiences (References)

Below is a sampling of projects that we have completed in the last two years. The provided sample give you an idea of the range of PSE broadband planning services. Additional experiences and references are available upon request.

Project Name	**Financial Modeling**
Project Location	Linden IN
Project Type	Prepare financial modeling tools to assist in managing business
Client Name	Tipmont REMC, IN
Contact Name	Ron Holcomb, CEO
Phone	(800) 726-3953
Email	rholcomb@tipmont.org
Date of Completion	September 2020
Project Length	7 months
Other Details	Provide the ability to view financial performance of two broadband business units on a stand-alone and aggregated basis. Tom Asp has worked with Wes on several projects over the past 20 years.

Project Name	**Partnership Development**
Project Location	Linden IN
Project Type	Assist in development of terms for a potential joint venture with neighboring cooperative
Client Name	Tipmont REMC, IN
Contact Name	Ron Holcomb, CEO
Phone	(800) 726-3953
Email	rholcomb@tipmont.org
Date of Completion	April 2021
Project Length	6 months
Other Details	Provide the ability to view financial performance of two broadband business units on a stand-alone and aggregated basis. Tom Asp has worked with Wes on several projects over the past 20 years.

Project Name	**Broadband Feasibility**
Project Location	Tomah WI
Project Type	Review the potential of a cooperative broadband business
Client Name	Oakdale Electric Cooperative, WI
Contact Name	Todd O'Neil, Energy Services Director
Phone	(608)372.4131
Email	toneil@oakdalerec.com
Date of Completion	July 2021
Project Length	6 months
Other Details	Examined range of potential business models for a broadband offering. Included market research, partnership review, and FTTP design.

Project Name	**Dark Fiber Pricing**
Project Location	Huntsville AL
Project Type	Assist in preparation of dark fiber lease pricing and policies
Client Name	Huntsville Utilities
Contact Name	Wes Kelley, President and CEO
Phone	Office: (256) 535-1264 Mobile: 256.929.9813
Email	Wes.Kelley@hsvutil.org
Date of Completion	August 2020
Project Length	4 months
Other Details	Tom Asp has worked with Wes on several projects over the past 20 years.

Project Name	**Broadband Feasibility Review**
Project Location	Marshfield, WI
Project Type	Represent Marshfield Utilities
Client Name	Marshfield Utilities (MU)
Contact Name	Nicolas Kumm, General Manager
Phone	(715) 898-2101
Email	kumm@marshfieldutilities.org
Date of Completion	September 2020
Project Length	4 months
Other Details	MU hired a different consultant to do a broadband design and business plan. PSE review and provided feedback to plan as an advisor to MU. During our review we highlighted several oversights which greatly impacted projections.

Project Name	**Broadband Feasibility**
Project Location	Tomah WI
Project Type	Review the potential of a municipal broadband business
Client Name	Marquette Board of Light & Power
Contact Name	Tom Carpenter, Executive Director
Phone	906-228-0311
Email	tcarpenter@mblp.org
Date of Completion	June 2021
Project Length	6 months
Other Details	Examined range of potential business models for a broadband offering. Included market research, partnership review, and FTTP design.

Project Name	**Middle-Mile Fiber Design**
Project Location	Florence AL
Project Type	Review the potential of deploying a middle-mile fiber that supports anchor institutions and encourages last-mile deployment
Client Name	Committee for a Greater Shoals (rural Alabama)
Contact Name	Greg Solomon
Phone	256-425-1250
Email	gotfiber@gmail.com
Date of Completion	March 2021
Project Length	12 months
Other Details	Examined range of potential business models for middle-mile fiber. Included review of grants, partnership review, community anchor facilitation, and fiber design.

Project Name	**Grant Application Support**
Project Location	Seneca SC
Project Type	Support One-Tone in applying for broadband grants
Client Name	Committee for a Greater Shoals (rural Alabama)
Contact Name	Mike Powell, COO (formally with Oconee County)
Phone	(864) 247-5813
Email	mike.powell@1tone.net
Date of Completion	January 2021
Project Length	3 months
Other Details	Supported One-Tone application. Tom Asp has worked with Mike on several projects over the past 10 years, including support of development of a capital lease and support of selling broadband assets.

Project Name	**Broadband Feasibility Review**
Project Location	Lansing MI
Project Type	Review FTTP feasibility for six MMEA members
Client Name	Michigan Municipal Electric Association (MMEA)
Contact Name	Katie Abraham
Phone	(517) 853-6680
Email	kabraham@mpower.org
Date of Completion	January 2021
Project Length	8 months
Other Details	Conducted a high-level FTTP design, market assessment, and financial projections for six MMEA members.

Project Name	**Broadband Migration Review**
Project Location	Norwood MA
Project Type	Business and technology review
Client Name	Norwood Light and Broadband
Contact Name	Kevin Shaughnessy, Superintendent
Phone	(781) 389-2815
Email	kshaughnessy@norwoodlight.net
Date of Completion	January 2022
Project Length	7 months
Other Details	Reviewed and recommend technology platform (HFC vs FTTP) and business models for the migration of the broadband business started in 2002.

6 Insurance

On the following pages, PSE provides insurance certificates confirming coverage as set forth in the Invitation to Bid.

POWESYS-01 JEPIO1

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 1/4/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Baer Insurance Services, Inc. 9701 Brader Way Madison, WI 53562	PHONE (A/C, No, Ext): (608) 830-5800	FAX (A/C, No): (608) 830-5877
	E-MAIL ADDRESS: baer@baerinsurance.com	

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Chubb Group of Insurance Cos.	
INSURER B : Berkley Insurance Company	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED

Power System Engineering, Inc
1532 W. Broadway, #103
Madison, WI 53713

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR	X		TECWID527648163N	7/1/2021	7/1/2022	DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 1,000,000
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY X PRO-JECT X LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO	X		(21)7360-41-34	7/1/2021	7/1/2022	BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
A	X UMBRELLA LIAB X OCCUR						EACH OCCURRENCE	$ 5,000,000
	EXCESS LIAB CLAIMS-MADE	X		UMBWID527648413N	7/1/2021	7/1/2022	AGGREGATE	$ 5,000,000
	DED X RETENTION $ 0							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						PER STATUTE / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
B	Professional Liab.			AEC-9037586-03	7/1/2021	7/1/2022	Per Claim/Aggregate	5,000,000
A	Cyber Liability			D52763575	7/1/2021	7/1/2022	Aggregate	3,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Town of Jamestown, Rhode Island and its subsidiaries, affiliates, directors, officers and owners are an additional insured on a primary non-contributory basis on the general liability, and auto liability policies when required by written contract. Umbrella is follow form. A 30 day notice of cancellation applies.

CERTIFICATE HOLDER

Town of Jamestown, Rhode Island
93 Narragansett Ave
Jamestown, RI 02835

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 01/03/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Aon Risk Services, Inc of Florida
1001 Brickell Bay Drive, Suite #1100
Miami, FL 33131-4937

CONTACT NAME: Aon Risk Services, Inc of Florida
PHONE (A/C, No, Ext): 800-743-8130 **FAX (A/C, No):** 800-522-7514
EMAIL ADDRESS: ADP.COI.Center@Aon.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : New Hampshire Ins Co	23841
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
ADP TotalSource FL XXIX, Inc.
10200 Sunset Drive
Miami, FL 33173
L/C/F
Power System Engineering Inc
1532 W. Broadway
Madison, WI 53713

COVERAGES **CERTIFICATE NUMBER:** 3793970 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. LIMITS SHOWN ARE AS REQUESTED.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PROJECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
	☐ OTHER							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	☐ **UMBRELLA LIAB** ☐ OCCUR						EACH OCCURRENCE	$
	☐ **EXCESS LIAB** ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DEC ☐ RETENTION $							
A	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WC 038386461 WI	07/01/2021	07/01/2022	X PER STATUTE ☐ OTH-ER	
							E.L. EACH ACCIDENT	$ 2,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 2,000,000
							E.L. DISEASE - POLICY LIMIT	$ 2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
All worksite employees working for POWER SYSTEM ENGINEERING INC, paid under ADP TOTALSOURCE, INC's payroll, are covered under the above stated policy.

CERTIFICATE HOLDER

Town of Jamestown, Rhode Island
93 Narragansett Ave.
Jamestown, RI 02835

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

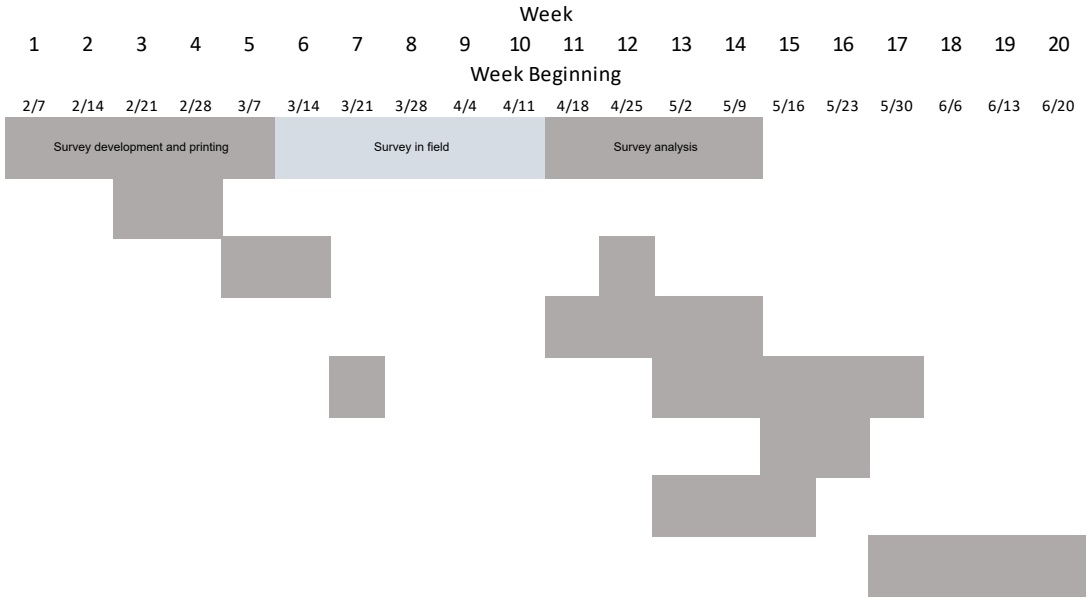
Aon Risk Services, Inc of Florida

8 Time Schedule

Given a notice to proceed the first week of February, we are able to complete the project by June 30, 2022.

A high-level schedule is shown below.

Task	Scope of Work
1	Assessment of community needs and interests
2	Assessment of Towns requirements compared to communities engaged in similar projects
3	Assessment of competitive and other challenges
4	Provide recommendations for a distribution network topology and underlying technology components
5	Network construction
6	Recommendations for funding of network construction and early operation
7	Network operator recommendations
8	Provide a pro forma analaysis and show all assumptions



9 Proposed Project Cost Summary

The proposed project costs are provided on the following two forms from the Invitation to Bid.

Town of Jamestown, Rhode Island

93 Narragansett Ave – Jamestown, RI 02835

INVITATION TO BID

Feasibility Study for a Community Network

Proposed Bid Price:$ 85,995

Bid Price in words: Eighty-five thousand, nine hundred and ninety-five dollars

The undersigned bidder hereby states that they have carefully examined this **INVITATION TO BID** and further agrees to the provisions, requirement, terms and conditions, all of which are acknowledged to be part of this **BID PROPOSAL.**

Name of Bidder: Power System Engineering (PSE)

Address of Bidder: 1532 W. Broadway, Suite 103, Madison, WI 53713

Authorized Signature _____ **Date:** Jan 4, 2022

Phone: 608-268-3556 **Fax:** 608-222-9378 **Email:** weikertj@powersystem.org

Appendix C: Cost Summary

All prices are inclusive of all costs and fees
Pricing is for PSE completion of all tasks
PSE reserves the right to shift cost between tasks as long as the total cost is not exceeded
All expenses (travel and subcontractor) are passed through at cost without any mark-up

#	Scope of Work Task	Estimated time & Hours	Cost	Requirements, dependencies, comments, or other information
1	Assessment of community needs and interests	80	$ 32,800	Includes subcontractor fees (passed through w/o markup), project kick-off meeting.
2	Assessment of Towns requirements compared to communities engaged in similar projects	17	3,170	
3	Assessment of competitive and other challenges	38	7,080	
4	Provide recommendations for a distribution network topology and underlying technology components	98	17,380	Includes onsite review
5	Network construction	30	6,475	
6	Recommendations for funding of network construction and early operation	20	3,440	
7	Network operator recommendations	36	6,280	
8	Provide a pro forma analaysis and show all assumptions	50	9,370	Includes final presentation
	Total time (hours) and Cost	**369**	**$ 85,995**	

Please see Exhibit C for a detailed description of each task.

Exhibit A: Market Structure

Businesses and residents in Jamestown have limited choices in service providers, and some have no choices for broadband. This can result in stifled technological innovation and service performance. These are symptoms of the core problem in the broadband marketplace—not just in the region, but nationwide—and are a result of poorly designed regulation in the broadband marketplace.

When the wired telephone market was evolving in the US, providers were guaranteed a monopoly service area and in return agreed to an obligation to serve and have service pricing regulated. For high-cost areas, a funding mechanism (Universal Service Funds) was established to subsidize the high-build cost areas. This structure resulted in 99.99 percent coverage of local telephone service.

The high cost of new fiber infrastructure, especially in rural areas, makes it difficult for potential competitors to enter the market, leaving the incumbent providers (when they can afford to build) firmly entrenched. In addition, incumbents have few incentives to make new infrastructure investments or to allow access to competitive providers over their existing infrastructure (a scenario commonly known as "open-access"). As a result, local cable and telephone companies are the primary providers of broadband service over their respective infrastructures.

The broadband market is unique in this regard. If the same model were applied to package shipping, as an example, we might see Federal Express, United Parcel Service, and the U.S. Postal Service building their own roads to reach customers. That would be an expensive and inefficient model—yet it is how broadband services are delivered in Jamestown and elsewhere in the U.S. In all but a few cases, every new competitor must build its own physical infrastructure to reach potential customers.

Correcting this will require updated regulations. Unfortunately, this may be challenging if at all possible. Regardless, we recommend that any plan developed by and for Jamestown consider regulatory recommendations and actions.

1 Affordable Broadband Definition

Another consideration is that the definition of broadband is changing, and affordability is complex.

The Federal Communication Commission (FCC) definition of broadband has evolved from 200kbps in 1996 to 25 Mbps up / 3Mbps down in 2015. Recent actions show that the FCC is moving the definition to 100 Mbps up / 20 Mbps down while consumers' expectations for broadband now frequently extend to a symmetrical 1 Gbps service.

Beyond availability of broadband, affordability varies depending on the geography being considered and the income of the consumer. Affordability can be seen from perspectives such as:

1. Affordable prices are those that are comparable to similar regions in the country. Under this definition, broadband in Jamestown is likely affordable today.

2. Affordable prices are those that are the same from cities to rural areas. Under this definition, broadband is not affordable in the rural areas, including Jamestown today.

3. Affordable prices are those when any household, regardless of disposable income, can acquire broadband services. Under this definition, broadband is not affordable today.

Fully addressing affordability under definitions 2 or 3 will require policy actions at the state or federal levels and may include a subsidy program for low-income individuals.

2 Partnerships and Alliances

Each broadband partnership is unique, and it's important that each party clearly understand the responsibilities, risks, and rewards.

Most public-private partnerships or alliances in the U.S. fit one of four models:

1. **Facilitation of Private Investment:** This alliance model focuses on facilitating private investment in broadband infrastructure. It offers the lowest risk to the public entity. A provider invests capital, designs and deploys infrastructure, and provides broadband services. In turn, the public entity provides economic and procedural incentives, including tax benefits, streamlined permitting, public rights-of-way access, accelerated construction timelines, and by becoming an anchor tenant.

2. **Leverage Public Assets:** In this model, both parties leverage and expand assets in order to advance the availability of broadband. The private provider leverages existing or new assets (fiber, towers, facilities) as appropriate and the assets to develop a robust broadband infrastructure. Most commonly, the public entity builds a fiber backbone that connects key facilities and electric assets and then leases excess fiber strands to the private provider. In another variation, the public entity builds a "dark" FTTP network (fiber only, no electronics) and then leases the dark FTTP to a private provider. Often, this model is combined with the "Facilitation of Private Investment" model described above.

3. **Leverage Public Financing:** This model is similar to an approach used at times in the U.S. for highways, toll roads, and bridges. It has had limited application in the US for broadband; however, it is frequently used in Europe. In this model, the public entity invests in infrastructure while the private partner assumes a combination of engineering, construction management, operations, and/or maintenance responsibilities. The financing under this model is secured by a known revenue source such as municipal electric revenues, the general obligation of the municipality, or a fee assessed on local property owners. In this model, the public entity is the financial backstop and takes the financial risk. If the private provider is unable to generate enough revenue to recover operating costs or debt service, the public entity is responsible.

4. **Obtain Operational Support:** In this model, the municipality deploys and operates the broadband network and is the retail service provider. To assist in operations, the public entity will contract operational support from one or more private providers. In Michigan, for example, the Town of Norway uses this approach via an alliance with Astrea Connect.

In most cases, reported public private partnerships are, in reality, an alliance based on variation of one of these models and all too often shift the majority of risk to the public partner.

3 Action Classifications

We outline below three key classifications of actions that might be considered to advance the availability and affordability of broadband:

1. Initiatives that can be implemented by the Town of Jamestown (or other entity).

2. Actions that will encourage private internet service providers (ISPs) to expand investment and services.

3. Steps that encourage development of federal or state policies and legislation.

A complete strategy to promote broadband availability will address both demand and supply issues. In addition, regulatory conditions impact investment, competition, and innovations in the industry.

As discussed, a core issue in advancing broadband is cost. Potential methods to reduce costs to facilitate a private provider investment include:

- Encouraging electric utilities to expedite make-ready and address make-ready costs.
- Streamlining permitting process.
- Seeking grant funding (joint application with provider).
- Providing grant funding to provider.
- Providing access to existing or planned fiber assets.
- Providing aid in marketing.

The first step is for the Town of Jamestown to examine its mission. The next step is to review what can be done to match that mission. The following questions will be asked:

- What can the Town do?
  - How does existing legislation shape what actions are appropriate?
  - How does existing legislation impact the process of taking an action?
- What can the Town influence?
- What actions and desired outcome require changes in legislation?
- What is the balance of supply and demand issues?

Often, discussion regarding broadband centers around infrastructure; however, infrastructure is not always the limiting factor. Concentrating on non-infrastructure factors can often help reach broadband objectives.

- Develop a policy position regarding universal service for broadband access (i.e., funding support for sparsely populated areas and low-income households).
- Enable consumers to have access to free or low-cost quality information resources. Libraries on a local, regional, statewide, and federal level can play a key role in reaching this objective.
- Protect consumer privacy and security of transactions on the Internet.
- Lobby for financial and legislative support of education and training programs.

3.1 Open Access Track Record in the U.S.

In theory, an open access infrastructure would address many of the above factors. However, open access deployments in the U.S. have struggled from a cash flow perspective (many of the success stories are heavily subsidized once a complete independent analysis is done). Open access models have had success in parts of Europe and Asia; however, those successes have been driven by regulatory requirements.

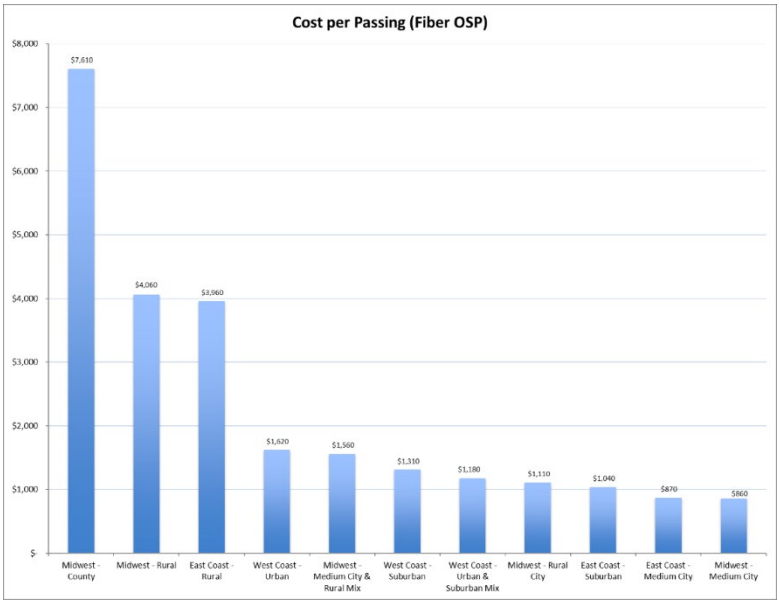
Given the population density in Jamestown, an open access infrastructure for retail services is challenging.

3.2 Cost of Deploying Fiber

The figure shows an example of the cost of deploying a fiber to the premises (FTTP) that passes every home and business in the respective service area. The cost is shown as a "Cost per Passing" for only the fiber plant and does not include network electronics, the fiber drop to a premises that subscribes for a service, or customer electronics.

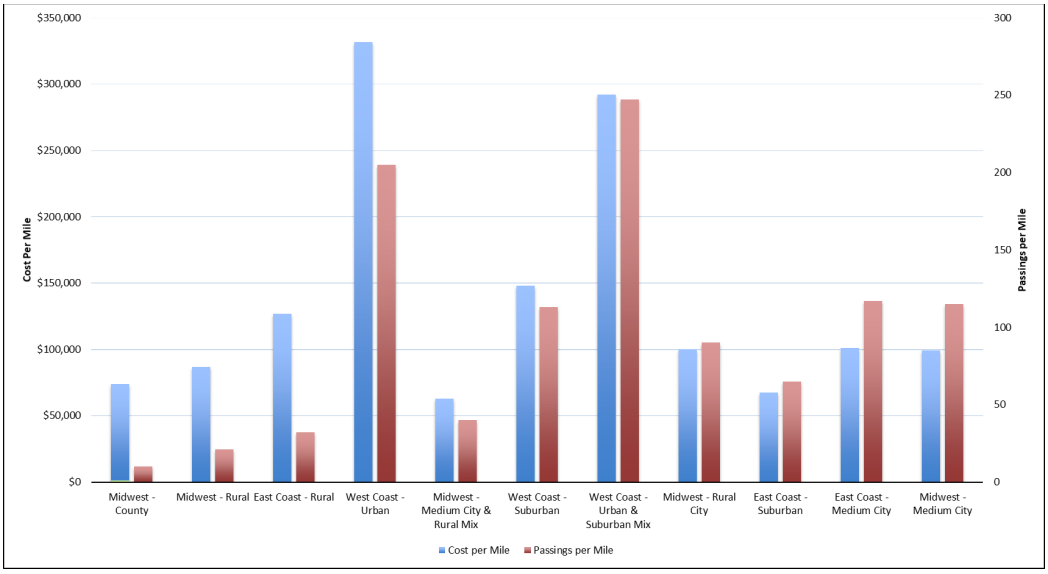
Based on our experience, deploying FTTP that has a per passing cost of $1,400 or less, can be financially supported in most cases. Areas above $2,000 per passing will require grants or other subsidy to support. In Jamestown we expect the FTTP passing cost might be in the $2,200 to $2,700 range.

Example: FTTP Outside Plant (OSP) Costs



The FTTP per-passing cost is not driven by the cost of deploying fiber; rather, it is the number of miles of fiber required to pass a premises. This is shown in the figure below. The highest per-passing cost example in the previous figure had on to the lowest per mile cost to deploy but had the lowest number of premises served by a mile of fiber.

Example: Cost per Mile and Passings per Mile

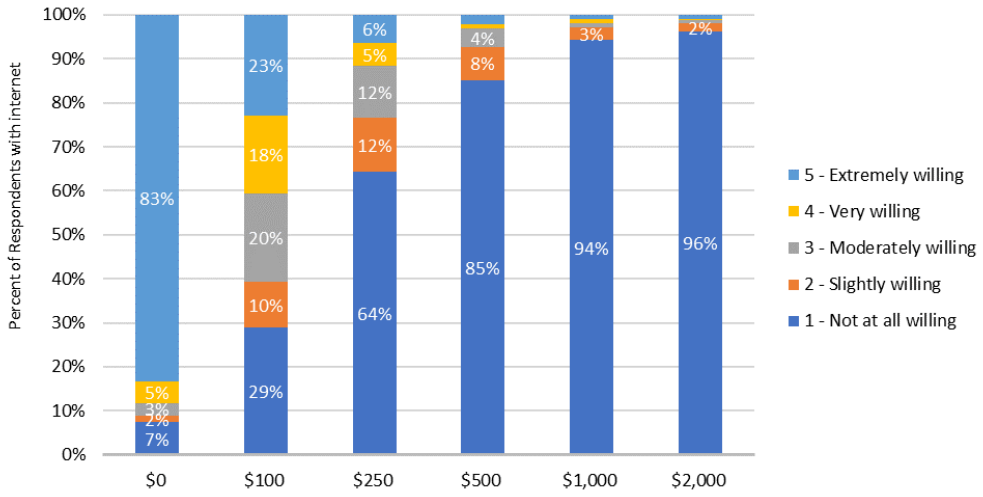


4 Demand Considerations

In a project for a Township in Michigan, the Township indicated that premises were unserved in many locations. In reviewing maps and other documentation provided by the broadband provider, we found that the properties were in fact served (the premises did have accessible infrastructure in the rights of way (ROW)). The discrepancy was based in the homeowner's willingness to pay a connection fee from a tap in the ROW to the premises. The homes in the township had driveways that are ¼ mile to ¾ mile long. The cost of a cable or fiber drop in these cases exceeded $3,000 compared to $100 in suburban regions.

The drop cost recovery is either through a connection fee or an adder to the monthly subscriber fee. As shown in the figure below, most homeowners are unwilling to pay a high connection fee. In the case of the Township, this unwillingness to pay was reported as a supply gap (connection not available), while in actuality, it was a demand gap (unwillingness to pay the cost to connect). If another provider overbuilds the existing provider, the drop cost and unwillingness to pay a connection fee remains.

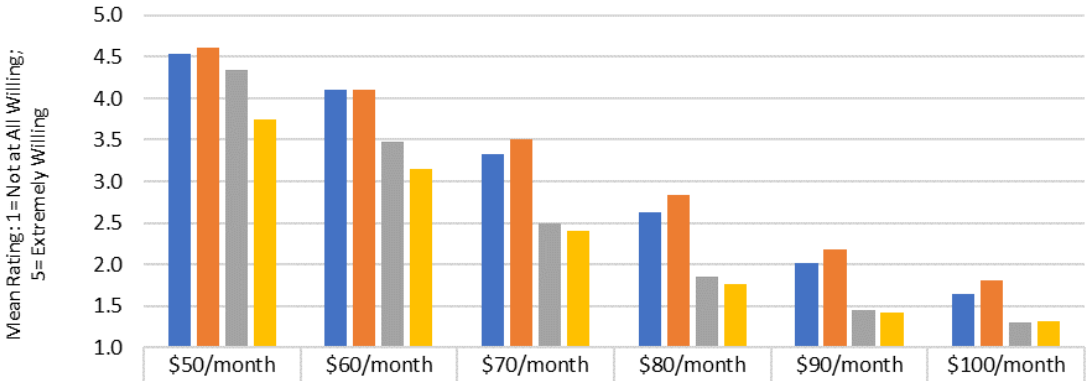
Willingness to Pay Construction Fee at Various Price Levels (example)



As indicated, consumers often claim that a given service is not available (a supply issue), when it is actually a demand issue (service is available, but not at a price the consumer is willing to pay). The figures below show the impact of age on the willingness to pay and the impact of the willingness to pay by service price.

At time, this condition is addressed with a premise that adding a second provider will drive prices down to a level that a consumer is willing to pay. At times this might be the case; however, given how capital-intensive broadband is, adding a second infrastructure can cause market prices to move higher in the long-term (see the above package delivery discussion).

Willingness to Purchase 1 Gbps Internet Service by Respondent Age



	$50/month	$60/month	$70/month	$80/month	$90/month	$100/month
< 45 years	4.5	4.1	3.3	2.6	2.0	1.6
45 to 54 years	4.6	4.1	3.5	2.8	2.2	1.8
55 to 64 years	4.3	3.5	2.5	1.9	1.4	1.3
65 years or more	3.7	3.1	2.4	1.8	1.4	1.3

Willingness to Purchase 1 Gbps Internet at Various Price Levels

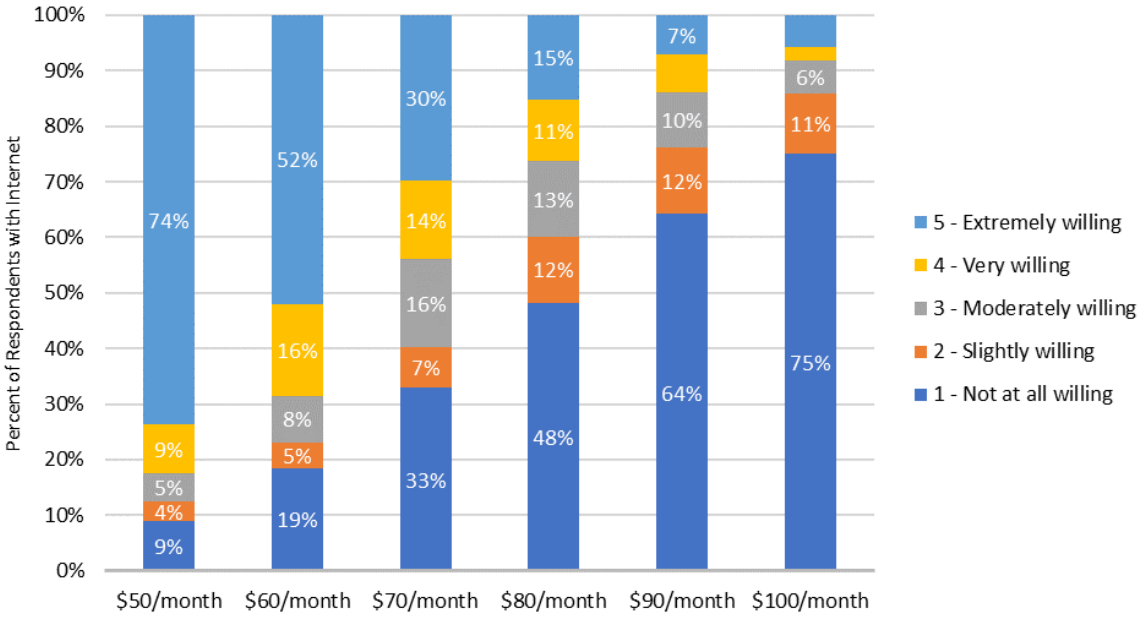


Exhibit B: Sample Survey

Marquette Board of Light & Power
Marquette, Michigan

Residential Internet Survey

Marquette Board of Light and Power

March 2021

Even if you do not have home internet access, please complete the relevant portions of this survey form and return to us. Your opinions, experiences, and information are important to us.

The Marquette Board of Light and Power (MBLP) is sending you this survey as part of our research on how residents use internet services in an effort to improve and expand the services provided in our community.

The information gathered by this survey will not be used by any other party for sales or marketing. Your responses will remain strictly confidential and will only be used for our stated intentions to better understand how residents use internet services and to explore strategies to extend and improve internet accessibility in Marquette and the surrounding Townships served by MBLP.

While we have not determined whether MBLP will ever provide internet service, gauging your interest will be an important part of our evaluation process. Even if you do not have internet access at your home, please complete the relevant portions of this survey. We value your input.

How long will the survey take?
This survey should take less than 10 minutes to complete. The questionnaire should be completed by the person who makes the purchasing decisions for your household's use of internet services.

What is the due date to complete the survey?
Please return your completed form in the enclosed postage-paid envelope by **April 17** or on-line at **mblp.survey.alchemer.com/s3** using the survey passcode printed in the box below.

What if I have questions about the survey?
If you have questions regarding this survey, please contact MBLP at (906) 228-0318 or send an e-mail to: office@mblp.org.

Thank you in advance for your participation!

ON-LINE SURVEY PASSCODE:

HOME INTERNET CONNECTION AND USE

1. Which of the following services do you currently purchase for your household? *(Please ✓all that apply)*

- [A] Internet service in my home (excluding cellular/mobile)
- [B] Cellular/mobile telephone service with internet (smartphone)
- [C] Cellular/mobile telephone service without internet (basic cell phone)
- [D] Fixed (land line) telephone service
- [E] Cable or satellite television
- [F] Don't know
- [G] None of the above

2. How important are the following services to your household? *(please circle your response for each aspect, where 1=Not at all important, 2=Slightly important, 3=Moderately important, 4=Very important, 5=Extremely important)*

Aspect	*Not at all important*				*Extremely important*
(a) Internet connection (any speed)	1	2	3	4	5
(b) Extremely fast (1 Gbps or faster) internet connection	1	2	3	4	5
(c) Basic (local channels) cable television service	1	2	3	4	5
(d) Premium cable television services	1	2	3	4	5
(e) Fixed (land-line) telephone service	1	2	3	4	5
(f) Cellular/mobile telephone service	1	2	3	4	5

3. How many internet-enabled devices (desktop/laptop computers, tablets, smartphones, smart TVs, smart speakers, and other devices) do you have in your home?

- [1] None. I do not have any internet-enabled devices in my home.
- [2] 1 or 2
- [3] 3 or 4
- [4] 5 or more

4. What is your primary home internet service connection? *(✓only one)*

- [1] No home internet service **(Please skip to Question 15)**
- [2] Telephone line—dial-up
- [3] Digital Subscriber Line (DSL) (from AT&T, iserv, Frontier, or other)
- [4] Cable modem (from Spectrum cable or other)
- [5] Satellite (from DirecTV, Dish Network, HughesNet, Viasat, etc.)
- [6] Cellular/mobile internet
- [7] Fixed wireless (IBC, up logon, NMU, other)
- [8] Fiber-optic connection (Spectrum, AT&T, or other)
- [9] Other (Please specify: _____)
- [10] Not sure/do not know

5. Approximately how much does your family pay PER MONTH for your *home* internet service (not including television or phone service if you bundle services)?

- [1] Free
- [2] $1 to $20
- [3] $21 to $40
- [4] $41 to $60
- [5] $61 to $80
- [6] $81 to $100
- [7] $101 to $120
- [8] More than $120

6. How would you describe the speed of your *home* internet connection?

- [1] Very Slow
- [2] Slow
- [3] Medium
- [4] Fast
- [5] Very Fast

7. How IMPORTANT are the following aspects of *home* internet service to you? *(please circle your response for each aspect, where 1=Not at all important, 2=Slightly important, 3=Moderately important, 4=Very important, 5=Extremely important)*

Aspect	*Not at all important*				*Extremely important*
(a) Speed of connection	1	2	3	4	5
(b) Reliability of connection	1	2	3	4	5
(c) Price of services	1	2	3	4	5
(d) Overall customer service	1	2	3	4	5
(e) Ability to "bundle" with other services	1	2	3	4	5

8. How SATISFIED are you with the following aspects of your current *home* internet access? *(please circle your response for each aspect, where 1=Not at all satisfied, 2=Slightly satisfied, 3=Moderately satisfied, 4=Very satisfied, 5=Extremely satisfied)*

Aspect	*Not at all Satisfied*				*Extremely Satisfied*
(a) Speed of connection	1	2	3	4	5
(b) Reliability of connection	1	2	3	4	5
(c) Price of services	1	2	3	4	5
(d) Overall customer service	1	2	3	4	5
(e) Ability to "bundle" with other services	1	2	3	4	5

9. How often does your family use your *home* internet connection (excluding cellular/mobile) for: *(please circle your response for each activity)*

Home Internet Activity	*Never*	*Occasionally*	*Frequently*
(a) Listening to music (streaming)	1	2	3
(b) Watching movies, videos, or TV	1	2	3
(c) Playing online games	1	2	3
(d) Working from home	1	2	3
(e) Social media/networks, including photo sharing, video calls (Facetime, Skype, Facebook)	1	2	3
(f) Shopping online	1	2	3
(g) Running a home business	1	2	3
(h) Accessing educational resources	1	2	3
(i) Homeschooling / distance learning	1	2	3
(j) Accessing government information or services	1	2	3
(k) Accessing medical services	1	2	3
(l) General information use/searching (Google, Yahoo, etc.)	1	2	3

10. Using a scale where "1" is "not at all likely" and "5 "is "extremely likely," how likely is it that you would: *(please circle your response for each aspect, where 1=Not at all likely, 2=Slightly likely, 3=Moderately likely, 4=Very likely, 5=Extremely likely)*

Factor	*Not at all Likely*				*Extremely Likely*
(a) Recommend your primary home internet service provider to someone else	1	2	3	4	5
(b) Renew your contract with your internet service provider	1	2	3	4	5
(c) Switch your primary home internet service provider for a lower price at the same connection speed	1	2	3	4	5
(d) Switch your primary home internet service provider for a faster connection speed at the same price	1	2	3	4	5

11. How IMPORTANT are these features when selecting a *home* internet service? *(please circle your response for each aspect, where 1=Not at all important, 2=Slightly important, 3=Moderately important, 4=Very important, 5=Extremely important)*

Feature	*Not at All Important*				*Extremely Important*
(a) I can choose from multiple internet providers	1	2	3	4	5
(b) I can buy broadband internet service (very high connection speeds)	1	2	3	4	5
(c) I can use my home internet connection to telework for my job	1	2	3	4	5
(d) I can use my home internet connection for remote schooling/education	1	2	3	4	5
(e) Ability to "bundle" with other services	1	2	3	4	5

12. Consider what price level would make you interested in switching to another internet service. How willing would you be to switch to a 200 Mbps service (high speed) for the following monthly price? *(please circle your response at each price level, where 1=Not at all willing, 2=Slightly willing, 3=Moderately willing, 4=Very willing, 5=Extremely willing)*

Monthly Price	*Not at all willing*				*Extremely willing*
(a) $50 per month	1	2	3	4	5
(b) $60 per month	1	2	3	4	5
(c) $70 per month	1	2	3	4	5
(d) $80 per month	1	2	3	4	5
(e) $90 per month	1	2	3	4	5
(f) $100 per month	1	2	3	4	5

13. Consider what price level would make you interested in switching to another internet service. How willing would you be to switch to 1 Gbps service (extremely fast) for the following monthly price? *(please circle your response at each price level, where 1=Not at all willing, 2=Slightly willing, 3=Moderately willing, 4=Very willing, 5=Extremely willing)*

Monthly Price	*Not at all willing*				*Extremely willing*
(a) $50 per month	1	2	3	4	5
(b) $60 per month	1	2	3	4	5
(c) $70 per month	1	2	3	4	5
(d) $80 per month	1	2	3	4	5
(e) $90 per month	1	2	3	4	5
(f) $100 per month	1	2	3	4	5

14. How willing would you be to pay a one-time installation fee (in addition to the monthly price) in exchange for having 1 Gbps (extremely fast) connection speeds? *(please circle your response at each price level, where 1=Not at all willing, 2=Slightly willing, 3=Moderately willing, 4=Very willing, 5=Extremely willing)*

Price of Installation (one-time)	*Not at all willing*				*Extremely willing*
(a) $0 (zero)	1	2	3	4	5
(b) $100	1	2	3	4	5
(c) $250	1	2	3	4	5
(d) $500	1	2	3	4	5
(e) $1,000	1	2	3	4	5
(f) $2,000	1	2	3	4	5

INTERNET USE FOR WORK AT HOME

15. Is any member of your household teleworking from home? *(please ✓only one)*

- [1] Yes, and our home internet connection enables effective telework
- [2] Yes, but our home internet connection is too slow to telework effectively
- [3] No, but I/we would like to if our internet speed would support it
- [4] No, I/we do not work from home **(Please skip to Question 18)**
- [5] Not sure (**Please skip to Question 18**)

16. In order to support your work at home needs what speed would/does your home internet connection need to be?

- [1] Low speed (24 Mbps or slower)
- [2] Moderate speed (25 Mbps to 100 Mbps)
- [3] High speed (101 Mbps to 500 Mbps)
- [4] Very high speed (501 to 999 Mbps)
- [5] Extremely fast high (1 Gbps or faster)
- [6] Not sure

17. Once COVID work restrictions are lifted, do you plan to work from home on a regular basis?

- [1] Yes, 5 or more days per week
- [2] Yes, 3 or 4 days per week
- [3] Yes, 1 or 2 days per week
- [4] No
- [5] Not sure

18. Does someone in your household have a home-based business or plan to start a home-based business in the next three years?

- [1] Yes, I/we already have a home-based business
- [2] Yes, I/we plan to start one within the next three years
- [3] No

19. How important is fast and reliable internet access for:

Please circle your response for each item below where 1=Not at all important, 2=Slightly important, 3=Moderately important, 4=Very important, 5=Extremely important

	Not at all important				*Extremely important*	*N/A*
(a) Working from home (teleworking)	1	2	3	4	5	9
(b) Planned/existing home-based business	1	2	3	4	5	9

INTERNET USE FOR EDUCATION

20. Does a member of your household use your home internet connection for educational purposes, such as remote learning, completing assignments, research, or study related to coursework or formal education?

- [1] Yes
- [2] No **(Please skip to Question 24)**

21. For what education level is your internet connection used?
(✓all that apply)

- [A] Early Childhood (Preschool, 3K, 4K)
- [B] Primary (Grades 5k – 8)
- [C] Secondary (Grades 9 – 12)
- [D] Post-Secondary (Technical/vocational training, college, etc.)
- [E] Graduate (Graduate, post-graduate, professional degree)
- [F] Continuing/Adult Education
- [G] Other _____

22. How important is a fast and reliable internet connection for your education needs?

- [1] Not at all important
- [2] Slightly important
- [3] Moderately important
- [4] Very important
- [5] Extremely important

23. Once COVID education restrictions are lifted, do you or anyone in your family expect to continue education from home?

- [1] Yes, on a regular basis
- [2] Yes, on an occasional basis
- [3] No
- [4] Not sure

ROLE OF MBLP AND YOUR OPINION

24. Please indicate to what degree you agree or disagree that Marquette Board of Light and Power (MBLP) should do the following: *(please circle your response for each statement, where 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*

Aspect	Strongly Disagree				Strongly Agree
(a) Help ensure that all residents have access to competitively priced and extremely fast internet services (1 Gbps)	1	2	3	4	5
(b) Help ensure that all students and teachers have access to competitively priced and extremely fast internet at their residence	1	2	3	4	5
(c) Build a MBLP fiber network on which competing private sector companies can offer extremely fast internet services	1	2	3	4	5
(d) Build a MBLP fiber network and offer extremely fast internet service to consumers	1	2	3	4	5

25. Please indicate to what degree you agree or disagree with the following statements: *(please circle your response for each statement, where 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*

Aspect	*Strongly Disagree*				*Strongly Agree*
(a) The market currently offers extremely fast internet at prices that my family can afford	1	2	3	4	5
(b) The availability of competitively priced extremely fast internet is a factor I would consider when choosing where to live	1	2	3	4	5
(c) Extremely fast home internet service is important for my work/job	1	2	3	4	5
(d) Extremely fast home internet service is important for my schooling/education	1	2	3	4	5
(e) Extremely fast internet access is as essential a service as water and electricity	1	2	3	4	5
(f) MBLP should offer extremely fast internet service to its customers	1	2	3	4	5
(g) I am willing to pay a premium for access for 1 Gbps (extremely fast) internet	1	2	3	4	5

INFORMATION ABOUT YOUR HOUSEHOLD

The following questions will describe the total group of survey respondents. Your individual information will not be reported separately—it will be reported only as a part of a larger group to help ensure that the respondents are a representative sample of MBLP customers.

Please provide this information with respect to the person who makes the purchasing decisions for your household's use of internet services (i.e. the household member filling out this questionnaire).

26. The person completing this questionnaire is:

- [1] Female
- [2] Male

27. Which of the following best describes your age?

- [1] 18 to 34 years
- [2] 35 to 44 years
- [3] 45 to 54 years
- [4] 55 to 64 years
- [5] 65 years and older

28. What is the highest level of education you have completed?

- [1] Some high school
- [2] Completed high school
- [3] Two-year college or technical degree
- [4] Four-year college degree
- [5] Graduate degree

29. What is your approximate annual household income?

- [1] Less than $25,000
- [2] $25,000 to $49,999
- [3] $50,000 to $74,999
- [4] $75,000 to $99,999
- [5] $100,000 to $149,999
- [6] $150,000 to $199,999
- [7] $200,000 or more
- [8] Prefer not to answer

30. How many people reside in your home (adults and children)?

Adults (including yourself)	Children age 18 and younger
[1] 1	[0] None
[2] 2	[1] 1
[3] 3	[2] 2
[4] 4 or more	[3] 3
	[4] 4 or more

31. Do you own or rent your residence?

- [1] Own
- [2] Rent

32. How long have you lived at your current address?

- [1] Less than 1 year
- [2] 1 to 2 years
- [3] 3 to 4 years
- [4] 5 or more years

Power System Engineering, Inc.

Full-service consultants

Exhibit C: Scope of Work (SOW)

for:

FEASIBILITY STUDY FOR A COMMUNITY NETWORK

Town of Jamestown
Jamestown, Rhode Island

January 6, 2022

Contact: Tom Asp

aspt@powersystem.org

Direct: 608-268-3509

Mobile: 847-922-3978

1532 W. Broadway
Madison, WI 53713

www.powersystem.org

Project Approach

Our starting point in developing the feasibility study is to understand the Town's vision and goals for the potential development of a broadband infrastructure and delivery of services. Our project approach involves research, rigorous analysis, and regular communication. We propose to deliver the analysis and recommendations that will enable the Town to make informed decisions about deploying an infrastructure and the next steps to facilitate residential and commercial broadband offerings if the Town decides to move forward. The study will cover all aspects of operating a broadband enterprise (directly or via a partnership) to ensure that the business is built on a solid foundation.

We stress ten key points in developing a broadband feasibility study. We will incorporate and encourage these steps throughout the process:

1. Understand broadband is a competitive business – consumers do have choices.
2. Get your house in order (operations and finance).
3. Do a thorough feasibility study and business plan – be cautious of advisors or consultants that promote no-risk deals or offers.
4. Know and understand every assumption and number in the financial analysis.
5. Facilitate team learning – give your team the time to learn, they are going to run the new business day-to-day.
6. Work closely with your Council.
7. Don't bet the bank – start slow.
8. Look at the potential for partnerships to avoid risks and reduce capital costs.
9. Know where failures occurred and why – understand both the good and bad municipal efforts.
10. A spreadsheet is just a spreadsheet. It's only as good as the assumptions and how those assumptions are treated.

It is critical that the Town understand and own all assumptions and decisions in the plan development. In the end, we will move to our next engagement, but if the Town pursues a broadband deployment, you will be responsible for the day-to-day activities (even if contracted or under a partnership/alliance) in operating a new enterprise[1] and will be responsible for the resulting financial risks and rewards. **Please note that the Town will receive working copies of all spreadsheets used in the financial forecasts and all raw survey data and analysis as part of the market research.**

[1] Although broadband has become an essential service, it is not a utility from a regulatory perspective. The Town would operate an enterprise that offers customers (directly or via a partnership) a for-choice broadband services.

1 Assessment of Community Needs and Interest

This task will:

- Assess residential needs with regards to services, cost expectations and estimated subscription rate (voice, video, and data).
- Assess business needs with regards to services required and desired, cost expectations and estimated subscription rate. We will consider both small and medium storefront businesses and at home businesses.
- Assess how an island-wide network could fulfill unidentified opportunities due to the absence of adequate cellular service in multiple geographic locations on the island
- Compare a needs assessment with current services and identify and characterize shortfalls
- Determine needs of the Town's non-resident property owners and seasonal visitors.

Many of our feasibility studies work with community volunteers and advocacy groups. With these efforts it is important to engage them in discussions and their ideas but not let them control outcomes or recommendations. **Recommendations need to be driven by the community needs, not an advocate of a particular solution.**

Our proposed steps are described below.

1.1 Facilitate a project kick-off meeting

To assist in gathering the baseline information, we will create an information request and distribute it to the Town and identified stakeholders. PSE will then facilitate a project kick-off meeting with Town representatives. We will discuss the project vision, motivations, and objectives; establish and confirm the project parameters; and review the drivers.

This kick-off strategy session will enable us to understand the Town's long-term vision and expected timeline. We will also seek guidance on any potential hurdles or areas of concern as well as insight into existing broadband service availability in the community, and the Town's knowledge of incumbent service providers' plans for future expansion.

We also view the strategy session as an opportunity to present a relevant case study and discuss best practices in broadband deployment.

Specific agenda items will include:

- Introduce team and identify project stakeholders.
- Identify project drivers; potential examples include:
    - Making Jamestown a better place to live, work, and do business.
    - Supporting any revitalization and/or economic development efforts.
    - Creating competitive and business opportunities.

    - Increasing revenue to the Town.
- Review project plan, schedule, key milestones, and deliverables.
- Review any existing infrastructure assets (conduit, fiber, and so on).
    - The Town currently owns ~190 parcels throughout the island of which ~140 parcels have no easements and could be made available to support this project.
- Review electric service provider (National Grid) and any known contacts.
- Review relevant maps, studies, and documents including:
    - Existing GIS data.
    - Streets, roads, and other infrastructure.
    - Details on key commercial and industrial customers.
    - Details on economic development efforts.
- Discuss perceptions of the market for broadband services (including among residential, small business, and commercial/industrial users).
- Identify existing and potential service providers.
- Discuss revenue opportunities (e.g., dark fiber leasing) that could be available to the Town.
- Discuss available broadband data services in the service area.
- Identify potential service gaps by sector (residential, small business, commercial/ industrial).
- Discuss market research approach and timeline.

1.2 Conduct stakeholder interviews

Following the kick-off meeting we will conduct, over a 2-day period, up to 6 group discussions to receive input on perceived connectivity needs.

We ask that the Town assist in the interviews by identifying the groups and sending invites to the discussion.

1.3 Outline network service footprint

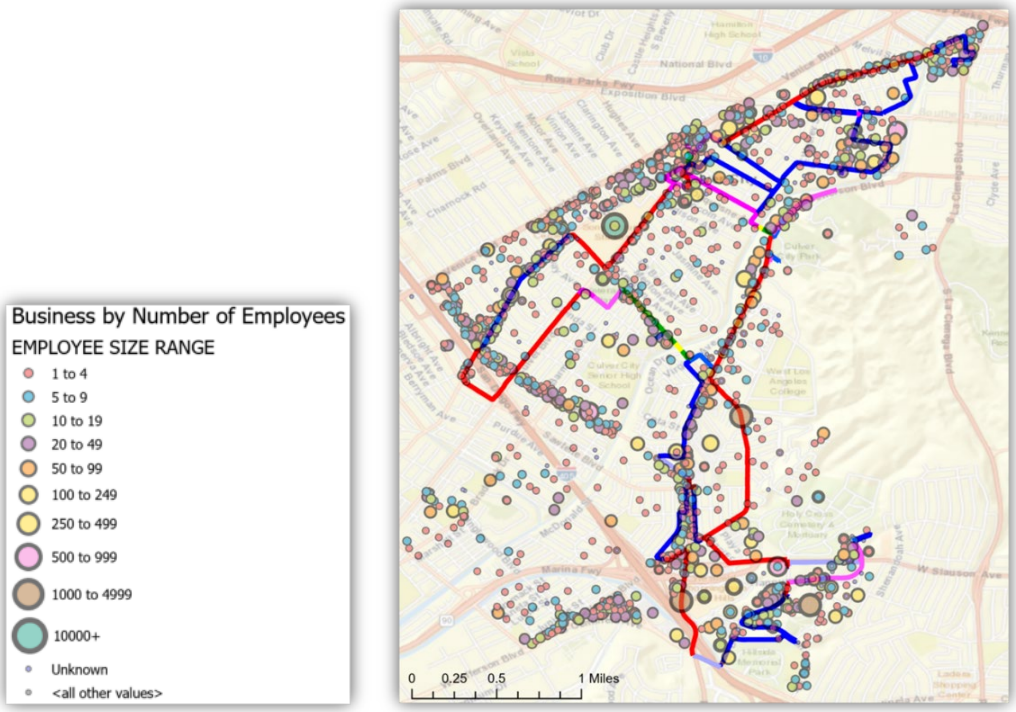
We will work with the Town staff to outline the service area to include in the study. We will examine potential phases of broadband deployment based on the location of any existing assets, customer base potential (business type, size, other), density of potential customers, and high-density residential customers. The analysis might result in serving potential locations based on a distance from existing fiber or targeted deployments based on neighborhoods or meeting other goals and objectives.

1.4 Conduct profile of businesses

Approximately 200 businesses (estimate based DataAxle.com) are in the Town. Mail surveys of businesses typically have substantially lower response rates than residential mail surveys, with an estimate of under 10 percent. If surveys were mailed to all businesses, a 10 percent response rate would yield only 20 responses, which is insufficient to draw firm conclusions. Furthermore, the heterogenous nature of businesses may provide a wide variety of conclusions that provide inadequate information upon which to base effective downstream plans. For this reason, an alternate approach to comprehensive survey research is proposed for the Town's business sector.

PSE proposes to evaluate business data available from third-party sources (Info-USA and others) to determine the key attributes (employee size, telecom spending, technology spending, other) of businesses in the Town. From the analysis, we can obtain a sense of the use and demand for a given service type.

As an example, the diagram below shows the locations of businesses in Culver City, CA and an estimate of the type of broadband service businesses might have an interest in.



Employee Size Range (Estimated)	Annual Telecom Spending (Estimated)							
	Less than $2,000	$2,000 - $5,000	$5,000 - $20,000	$20,000 - $50,000	$50,000 - $100,000	$100,000 - $250,000	Over $250,000	Total
1 to 4	805	511	107	5	-	-	1	1,428
5 to 9	223	285	226	14	5	1	2	757
10 to 19	23	86	215	31	-	-	-	356
20 to 49	-	34	100	69	4	4	2	213
50 to 99	-	-	27	30	14	4	1	75
100 to 249	-	1	1	9	11	5	5	32
250 to 499	-	-	-	1	4	2	1	9
500 to 999	-	-	-	-	-	1	2	4
1000 to 4999	-	-	-	-	-	-	4	4
10000+	-	-	-	-	-	-	1	1
Unknown	-	-	-	-	-	-	1	1
Total	1,051	918	677	157	37	17	22	2,879

- **Tier 1 (green)** consists of potential customers on the high end that are spending $100,000 or more annually on telecommunications services and that have 10 or more employees.

  These are enterprise customers, which means they likely prioritize reliability and will opt for higher-capacity services or service with committed interface rates (CIR) and service level agreements (SLAs). Enterprise customers tend to be well-served by multiple providers.

- **Tier 2 (beige)** is made up of businesses that spend between $20,000 and $100,000 annually on telecommunications services as well as businesses that spend over $100,000 on telecommunications services and have fewer than 10 employees.

  This category tends to be underserved, and often may have little choice but to purchase cable modem service, even though it may not fully meet their needs. While cable modem speeds may be sufficient to meet their needs, these businesses often also prioritize factors like reliability and overall performance. These customers are likely to pay a slight premium for a mid-range product.

- **Tier 3 (orange)** comprises businesses that spend between $5,000 and $20,000 each year on telecommunications services. For this type of business, cable modem service is likely acceptable, as price and speed tend to be more important factors than reliability.

  These businesses are likely to place some importance on reliability, though not to the degree that Tier 2 and Tier 1 businesses do.

- **Tier 4 (blue-grey)** consists of businesses that spend up to $2,000 each year on telecommunications. Based on annual telecommunications expenditures, often these businesses likely are well served with cable modem, DSL, and other services.

  Reliability is important for any business; however, it is unlikely to be a critical driving factor for businesses in the Tier 4 category as it is for those in the other categories. Price is the primary driver for purchase decisions.

1.5 Conduct residential market research

In order to evaluate options to improve access to broadband communications services in the Town, we recommend conducting residential market research.

A comprehensive evaluation of current internet services and the needs of its population requires a solid foundation of consumer data and input. This proposal outlines the scope of a residential customer survey to support the economic and market evaluations of broadband in the Town.

A residential mail survey is proposed across a random sample of households to gain information about residents' current internet service provider, prices paid, uses of the internet, limitations of their current internet service, and their opinions about the role of the Town to support delivery of broadband services to residents, schools, and other essential service providers.

A mail survey is proposed as the preferred method over telephone or online survey for the following reasons:

- Telephone surveys are more expensive due to labor costs and the inability to gather a sufficient number of responses. The widespread use of caller ID and cell phones has made it more difficult to target participants within a particular geographic area and has led to increasing response bias. The advantages of a telephone survey are less time requirements and the ability to meet a quota of respondents in a particular demographic category.
- Online surveys are effective where a comprehensive list of email addresses for recipients is available. This provides fast response times and eliminates printing and postage costs. However, without a comprehensive and accurate e-mail list for potential recipients, an online survey may not provide sufficient or reliable results. A snail mail to residents providing a link to an online survey will likely lead to a very low response rate and insufficient results. Third-party email lists are not comprehensive and may include outdated information that will generate a large number of undeliverable emails that may be discontinued as potential spam.

PSE proposes to survey all households in the Town (estimated at 2,600). This should provide nearly 380 responses[2] assuming a response rate of 15 percent, which is a sufficient number to support statistically valid survey results at a 95 percent confidence level within a confidence interval of ±5.0 percent.

We will acquire a database of households from DataAxle and will also review and supplement the list with Town records.

A booklet-style questionnaire with a cover printed on high-quality paper would provide a professional document to enhance the response rate. The questionnaire would include approximately 12 half-size pages of questions to be completed in ten minutes or less (approximately 25 to 30 questions including multiple-response options). The survey packet would

[2] PSE and its survey subcontractor, Clearspring Research, cannot guarantee a response rate. The assumed response rate is based on similar surveys conducted in similar surveys in recent years. We typically see a 10 percent to 20 percent response rate.

be mailed using standard postage class to reduce outgoing postage costs and would include a postage-paid response envelope to be returned directly to the survey processor.

We provide each survey recipient the option of completing the survey booklet by hand or completing the survey online.

The anticipated response rate of 15 percent assumes that the Town is designated as the survey sponsor and its logo and name are used on the outgoing envelope and the survey booklet.

The questionnaire will be designed to be completed in ten minutes or less and will include topics such as:

- Current internet service, provider, price paid, and satisfaction level with various aspects.
- Current uses of the internet including home-based business, educational, and health services uses.
- Willingness to pay for a higher-speed service, including monthly price and a potential one-time hook-up fee. A range of price points will be provided to determine price sensitivity.
- Opinion about the role of the Town to ensure access to high-speed internet service (if desired to include).
- Basic household demographics.

We will also include cable television and telephone questions that will assist in estimating take rates.

Surveys will be returned to the survey processor using its business reply mail (BRM) account for data entry. Survey results will be entered, cleaned for appropriate responses, audited, and processed using SPSS[3] or other software. Survey results will be summarized and will be converted to Excel for transmittal and the development of report tables and graphics. In addition to simple frequency tables, cross-tabulations of key results will be completed to provide additional insights into consumer data and opinions. For example, the uses of the internet by the age of the respondent or presence of children in the home will be evaluated to establish key demographics for various aspects and price points.

Survey results will be provided in a report section that documents the survey process, methodologies, results, and key findings. The survey report section is designed to be inserted into a more comprehensive evaluation report regarding the Town's options for broadband services. In addition to the report section, an Excel file with key frequency tables and cross-tabulations will be provided to provide data documentation and additional detail beyond what is highlighted in the report.

[3] Statistical Package for the Social Scientist, www.ibm.com/products/spss-statistics

2 Assessment of Jamestown's requirements compared to communities engaged in similar projects

In this task we will provide data based upon publicly available information regarding:

- Municipalities that have built community networks.
- Challenges for municipalities with a measurable percentage of non-resident property owners and a seasonal population.
- Municipalities that have started a community-wide project, but opted out or failed during planning, deployment or operation.
- The importance of municipal wiring infrastructure and/or maintenance facilities, since Jamestown does not have a municipal light and power company.
- We will provide examples and discuss how municipalities have built and operated networks without municipal-owned utilities and the challenges they faced.
- Discuss the potential of collaboration with the Town's electrical power provider National Grid through any planned or future Smart Grid deployment.
    - We will conduct a reach out to National Grid and have extensive experience with Smart Grid and other electric utility connectivity needs
- Discuss any advantages and disadvantages of including neighboring communities to achieve scale for deployment. We will provide examples of similar collaborations, nation-wide and in New England.

3 Assessment of competitive and other challenges

This task will assess the potential competitive and other challenges, including:

- Discuss the expected reactions from incumbents and opinions of what objections will be raised and if blocking issues are likely to be presented
- Discuss possible alternative responses from incumbents, such as Fixed Wireless and how this type of response could be evaluated against that of a community-wide network deployment
- Note potential environmental, economic, legal challenges that may be specific to Jamestown and Rhode Island

4 Provide recommendations for a distribution network topology and underlying technology components

The conceptual design will develop pricing for all aspects (labor, material, engineering, etc.) of deployment of the target areas and in a fashion that can be extrapolated to develop complete service area deployment pricing.

We will review all-aerial, mixed aerial/underground, and all-underground construction options. The high-level design process should help the Town determine the best approach and value for its network.

Specifically, we will:

- Propose one or more network designs for Jamestown that show a fiber backbone, neighborhood distribution plans and other supporting infrastructure.
- Discuss the advantages and disadvantages of deployment strategies such as Fiber to the Premises (FTTP), fixed wireless and alternative technologies that should be considered.
- Discuss the advantages and disadvantages of a mixed deployment strategy for neighborhoods with limited distribution characteristics, e.g., all underground utilities.
- Discuss technology choices in terms of operational costs, flexibility to support tiered services and future viability. These should include Active Ethernet optical networks, GPON/NG-PON optical networks, 5G macro/small cell wireless and fixed wireless (mmWave mesh and/or CBRS).
- Discuss any special considerations for providing services to Jamestown's summer population and visitors.
- Discuss the OSHEAN backbone and if it has advantages over potential backbone/backhaul offers by incumbent providers.
- Discuss how the proposed network can evolve to increase capacity and incorporate future Internet services and network-based technologies, e.g., driverless vehicles.
- Discuss how the proposed network addresses likely needs and performance.
- Discuss shortfalls of incumbent's existing networks and potential for continued hybrid infrastructure deployment, e.g., small cells.

5 Network construction

We will prepare a cost estimate for the proposed network based on prevailing wages and out experiences. To assist in the cost estimate, we will work with the Town to understand the permitting and ROW process in the Town and better understand the existing underground facilities.

- For the proposed network design(s), we will estimate the cost of construction for:

    - Network backbone
    - Neighborhood laterals
    - Residences and businesses
    - Routing, switching and endpoint access technologies
    - Network huts or other support structures on Town-owned or controlled parcels
- We will estimate cost differences for aerial, underground, microtrenched or other installation methods.
- Estimate benefits/disadvantages of build-once versus construction on subscription.
- Discuss possible strategies to lower initial construction costs.
- Indicate how Town parcels could be of use for construction, operations, and maintenance.
    - The Town currently owns ~190 parcels throughout the island, of which ~140 parcels have no easements and could be made available to support this project.

6 Recommendations for funding of network construction and early operation

The proposed network will require a substantial investment and likely a long-term loan or a bond to cover implementation and early operation costs. The appropriate type of financing will depend upon the security offered by the Town.

Typical financing may include:

1. General Obligation Bonds. Secured by the full faith of the Town or other jurisdiction.

2. Revenue Bonds. Secured by a proven revenue stream (sales taxes, water, other). The bonding community has not accepted anticipated revenues from a start-up broadband enterprise as security.

3. Internal Loans. The security method is dependent upon which entity is providing the loan, typically used to cover initial operating costs from an existing Town department to the department or other entity that has formed an enterprise for entering the broadband business.

PSE will outline the financing options and applicability to the Town. **Please note this is not a legal review or a review of the Town's capacity or ability to obtain a bond or loan.**

Grants may be available to assist the initiative. We will conduct a review of potential grant sources, requirements, and timing (including the developing federal infrastructure program). The review of grant sources will include economic development, state, local, and Federal (RUS, Reconnect, CAF, other). We will leverage our national experience with grant assessments and supplement with feedback from the stakeholders. The review will include an assessment and identification of what grants may or may not be of interest to the enterprise. **It is important to note that many of**

the grants have requirements that the enterprise must be an operating entity offering broadband services for the previous two to three years.

In addition, this task will:

- Discuss various options for public, public/private partnership and fully private funding with terms for future Town ownership.
- Discuss project bonding strategies.
- Discuss consequences of a pure finance arrangement versus a financing and operations partnership.
- Discuss any funding methods that could be considered, such as property assessment, RI/Federal economic development under Broadband funding programs or other means of long-term funding.
- Potential revenue from dark fiber leasing.

7 Network operator recommendations

Sales and marketing are all too often overlooked by municipal broadband initiatives. Municipalities often believe they understand sales and marketing since they operate a water utility. But the broadband business is not a utility. Consumers have choices. They can choose to not to buy a service, use their mobile service, or acquire from the cable company, for example. While it is true that with a community infrastructure, the Town can offer services with greater capacity and speed, consumers are still cost-conscious, and the capabilities of wireless and cable-based alternatives continue to evolve.

A critical step is to define the breadth and depth of services offered. For example, should the Town just concentrate on broadband and show consumers how they can reduce or eliminate cable television and telephone expenses, or should the Town offer a me-too broadband, cable television, and telephone offering?

We will prepare a sales and marketing approach that addresses critical and essential sales and marketing functions that will be required for the Town to successfully gain customers and grow market share. Included in this step is an analysis of the existing providers in the region.
Also included in this step is a review of potential partnership and alliance models.

Specifically, this step will review the following operation recommendations:

- Existing ISPs, including incumbents, Town run or other private network operator(s), including discussion of important licensing, contractual and other terms, e.g., length of contract.
- If voice and video services are found to required, discuss how those services would be provided and managed by network operators in above.

- Discuss strategies for the community to maintain local control of the entire network and to enable long-term responsiveness to change in needs.

8 Provide a pro forma analysis and show all assumptions

We will provide a pro forma analysis and show all assumptions for the first 20 years of operation of the most viable design and up to three operations approaches. We understand that Rhode Island laws require that prevailing wages must be included for all cost modeling.

We will prepare three financial models for this project that follows accounting standards and that is of investment-grade quality to support the due diligence in funding a broadband project of this size.

1. Retail service model

2. Dark FTTP lease model.

3. Partnership model.

The financial models will contain estimates and documented assumptions for each cost and revenue item. All assumptions will be vetted with Town staff. The financial model will include but will not be limited to the costs of design, construction for the FTTP network, network electronics, home equipment, professional services, installation, startup, licensing, renewals, upgrades, wholesale connection cost, and wholesale service cost. The revenue side of the financial model will identify optimal pricing and assess potential take rates, customer distribution, and ramp-up periods across the first phase of the deployment. A take-rate analysis should be completed to derive minimum, optimal, and market-based take rates financial results.

We will include, at minimum, the following schedules:

- Income statement
- Cash flow statement with financial ratios (times interest earned, debt to asset, debt coverage, working capital, IRR, NPV, other), and sources and uses of funds
- Capital addition plan with metrics (per passing cost, homes connected costs, drop costs)
- Renewal and replacement schedule
- Depreciation schedule
- Debt schedules
- Expense statement showing direct and overhead
- Staffing costs
- Cumulative and annual uptake (take rates)

- Key assumptions and escalators (please note: a common mistake we see is using the same inflation factor on revenues and expenses, which results in an unrealistic increase in net revenues (revenues less expenses))

The financial analysis will be incorporated into an investment-ready funding plan for the Town that includes the required proforma financial statements and financial metrics.

Please note that direct and soft community benefits are given scrutiny by opponents when they are included financial analysis. We recommend caution when considering and documenting any allocations from other departments.

We will prepare a comprehensive plan that recommends strategic approaches and roadmaps of concrete actions for the Town's consideration. The report will include all the data, insights, and recommendations developed in the previous tasks.

We will provide the Town with an electronic draft of our report, which will include a concise narrative supported by tables, graphics, and maps as appropriate. We will incorporate feedback from reviewers and deliver an electronic version of the final report and supporting financial analysis spreadsheets.

We will also prepare a power point presentation and present the findings to the Council and Town representatives.